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Master
Specification
No. 101b

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS

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UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR PACKING, FLAX

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 101b

[Revised May 12, 1927. Supersedes F. S. B. Spec. 101a]

This specification was officially promulgated by the Federal Specifications Board on December 29, 1923, for the use of the departments and independent establishments of the Government in the purchase of flax packing.

[The latest date on which the technical requirements of this revision shall become mandatory for all departments and independent establishments of the Government is August 12, 1927. They may be put into effect, however, at any earlier date after promulgation.]

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I. GENERAL SPECIFICATIONS

There are no general specifications applicable to this specification.

II. GRADE

Flax packing shall be furnished in but one grade.

III. MATERIAL AND WORKMANSHIP

Packing shall be made from well-cleaned long flax fiber, braided and squared. It shall be free of warp, core, foreign fibers, or substitutes. It shall be thoroughly and evenly impregnated with pure tallow. Oils and greases other than pure tallow shall not be permitted.

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IV. GENERAL REQUIREMENTS

See detail requirements.

V. DETAIL REQUIREMENTS

1. The length of staple shall be such that when a section of packing 20 inches long is carefully unraveled and combed out with a coarse comb it shall give a brush in which 40 per cent of the fiber, by weight, shall be at least 8 inches long.

2. The quality of the staple shall be such that when a roving is carefully untwisted and the fibers straightened out the tensile strength, in kilograms, shall be not less than one hundred times the weight of the roving expressed in grams per centimeter of length. See VI, 2, (*b*).

3. The finished packing shall contain not less than 40 nor more than 50 per cent, by weight, of tallow.

4. There shall be no evidence of jute, hemp, or other foreign fibers.

5. The weight per linear yard of the finished packing shall be not less than shown by the following table, the weights of intermediate sizes to be in proportion:

Size of packing (inches)	Weight per linear yard (minimum)	Size of packing (inches)	Weight per linear yard (minimum)
	Pounds		*Pounds*
1/4	0.02	1	1.40
1/4	.09	1 1/8	1.80
3/8	.20	1 1/4	2.25
1/2	.35	1 1/2	3.00
5/8	.55	1 3/4	3.75
3/4	.80	2	4.75
7/8	1.10		

The tallow shall be pure and refined, free from rancidity, and shall contain not more than the equivalent of 2 per cent of oleic acid. The saponification number shall be not less than 192 nor more than 198.

VI. METHOD OF INSPECTION AND TEST

1. The inspector shall select two samples 24 inches long from each lot of 1,000 pounds or less of each size.

2. Physical tests shall be made as follows:

(*a*) Brush Test.—A piece of packing 24 inches long shall be securely tied with a piece of strong string 20 inches from one end and the 20-inch section of the packing carefully unbraided. The lubricant shall then be washed out of the packing with gasoline and the packing allowed to dry by evaporation. The unbraided section is then further separated into rovings by untwisting, and each individual roving is carefully combed out until all fibers not held at the tied

point are removed, using care not to break the fibers. This is accomplished by starting at the free end and working gradually toward the butt end. The comb should never be used with a straight drag or violent motion, but shall be inserted vertically and the back rolled in the direction of the combing motion; that is, toward the free end of the brush. The comb shall have teeth not less than $\frac{3}{4}$ inch long, $\frac{1}{16}$ inch thick, and set 8 to the inch. After each roving is combed out the whole brush is straightened. To determine the per cent by weight of fiber in the brush that is more than 8 inches long, the brush is tied at a point 8 inches from the butt end of the brush with a strong string. The brush is then cut off the packing at the butt end, flush with the string first tied to form the brush, and weighed (weight 1). All fibers not held by the string at the 8-inch mark are then carefully combed out from the large end of the brush and the double-end brush weighed (weight 2). Weight 2 divided by weight 1 gives the percentage of fiber by weight in the original brush that was 8 inches or more in length.

(*b*) Tension Test.—The packing is carefully unbraided into rovings. All of the lubricant shall then be thoroughly washed from the sample with gasoline and the packing allowed to dry by evaporation. Cut a length of 20 cm from each of three rovings and test each of these lengths as follows: Weigh accurately on a chemical balance. Carefully untwist and straighten out the fibers, making them as nearly parallel as possible. Cement each end of the specimen with collodion to the extent of not more than one-half inch, care being taken not to twist the fibers during the cementing process. A fabric testing machine of the inclination-balance type operating at a speed of 12 inches per minute is used to determine the breaking strength. One-half inch of each end of the specimen is gripped in the clamps of the machine. The tensile strength of the fiber is calculated to kilograms per gram-centimeter of length. The formula used for the calculation is as follows, the average strength of three specimens being reported as the tensile strength:

$$K=\frac{P\times L}{G}$$

in which

K = tensile strength in kilograms per gram-centimeter,
P = breaking strength of specimen in kilograms,
L = length of specimen in centimeters,
G = weight in grams.

3. Chemical tests are made as follows:

(*a*) Lubricant.—The percentage of lubricant is determined quantitatively by extracting the tallow with ether.

(*b*) Oleic Acid.—Use method 510.3, United States Government specification No. 2c.

(*c*) Saponification Number.—Use method 540.1, United States Government specification No. 2c.

(*d*) Substitute Fibers.—The fibers shall be stained with a chloriodide solution (Herzberg stain) and examined with a microscope. The absence of cross markings approximately at right angles to the length of the fibers and a distinct yellowish coloration indicates the presence of jute.

VII. PACKING AND MARKING OF SHIPMENTS

Material shall be packed and marked in accordance with the best commercial practice, unless otherwise specified.

VIII. NOTES

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